

**Indiana Course-Aligned Assessment
Geometry – Blueprint**

Standard	Description	Percent Range *
1 – Points, Lines, Angles, and Planes	Students understand the relationship between geometric ideas and their representation with coordinate systems. They find lengths and midpoints of line segments, slopes, parallel and perpendicular lines, and equations of lines. They also construct lines and angles, explaining and justifying the processes they use.	6-16%
2 – Polygons	Students identify and describe polygons (triangles, quadrilaterals, pentagons, hexagons, etc.), using terms such as regular, convex, and concave. They find measures of angles, sides, perimeters, and areas of polygons, justifying their methods. They apply transformations to polygons and they relate geometry to algebra by using coordinate geometry to determine congruence, similarity, symmetry, and tessellations.	14-24%
3 – Quadrilaterals	Students classify and understand relationships among quadrilaterals (rectangle, parallelogram, kite, etc.). They find measures of sides, perimeters, and areas of quadrilaterals, justifying their methods. They relate geometry to algebra by using coordinate geometry to determine regularity, congruence, and similarity. They use properties of congruent and similar quadrilaterals to solve problems involving lengths and areas.	9-19%
4 – Triangles	Students identify and describe various kinds of triangles (right, acute, scalene, isosceles, etc.). They define and construct altitudes, medians, and bisectors, and triangles congruent to given triangles. They prove that triangles are congruent or similar and use properties of these triangles to solve problems involving lengths and areas. They find measures of sides, perimeters, and areas of triangles, justifying their methods. They relate geometry to algebra by using coordinate geometry to determine regularity, congruence, and similarity. They understand and apply the inequality theorems of triangles.	17-27%
5 – Right Triangles	Students prove the Pythagorean Theorem and apply it to solving problems, including those involving the altitudes of right triangles and triangles with special angle relationships. They define and understand the concepts of the trigonometric functions (sine, tangent, etc.), know and use basic relationships among these functions, and apply their knowledge of trig functions to solving word problems.	4-14%
6 – Circles	Students define and understand ideas related to circles (radius, tangent, chord, etc.). They perform constructions and prove theorems related to circles. They find measures of arcs and angles related to them, as well as measures of circumference and area, and they relate geometry to algebra by finding the equation of a circle in the coordinate plane.	11-21%
7 – Polyhedra and Other Solids	Students describe and make regular and nonregular polyhedra (cube, pyramid, tetrahedron, octahedron, etc.). They explore relationships among the faces, edges, and vertices of polyhedra. They describe sets of points on spheres, using terms such as great circle. They describe symmetries of solids and understand the properties of congruent and similar solids.	4-14%
8 – Mathematical Reasoning and Problem Solving	In a general sense, mathematics is problem solving. In all mathematics, students use problem-solving skills: they choose how to approach a problem, they explain their reasoning, and they check their results. At this level, students apply these skills to making conjectures, using axioms and theorems, understanding the converse and contrapositive of a statement, constructing logical arguments, and writing geometric proofs. They also learn about inductive and deductive reasoning and how to use counterexamples to show that a general statement is false.	**

* This range represents the approximate emphasis for each standard on the assessment.

** All test questions address Standard 8; however, all questions are mapped to a specific content area in Standards 1 – 7. Problem Solving should be taught in connection with content.